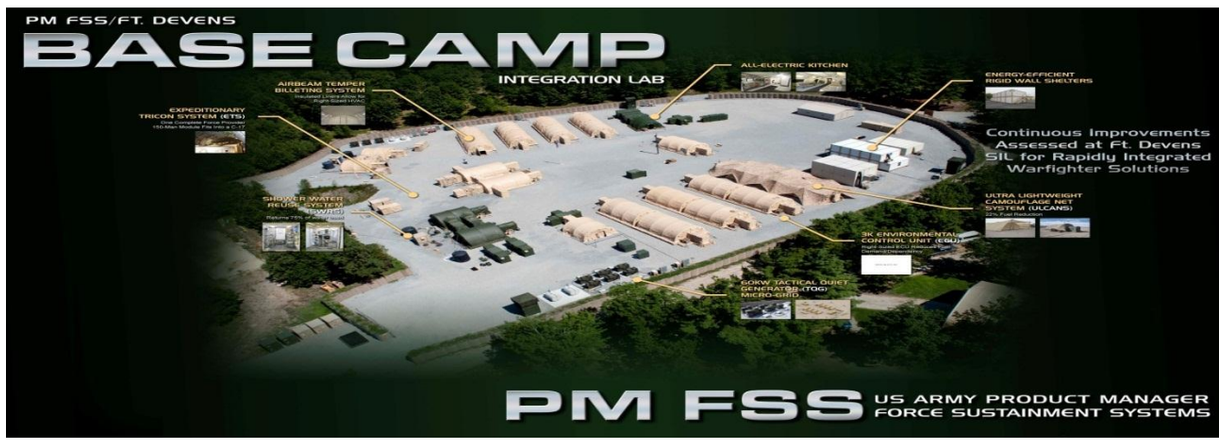
# Base Camp Integration Laboratory (BCIL) EES Demonstration RFI

*Exceptional service in the national interest*

Sandia National Laboratories




## Hosted by: Sandia National Labs

U.S. DEPARTMENT OF ENERGY | National Nuclear Security Administration

Sandia National Laboratories is a multi-program laboratory managed and operated by Sandia Corporation, a wholly owned subsidiary of Lockheed Martin Corporation, for the U.S. Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.

# Housekeeping

- All participants will be in listen-only mode throughout the broadcast.
- You can connect to the audio portion of the webinar using your computer's speakers or a headset. You can also connect by telephone.
- You can enter your questions by typing them into the "Question Box" on the webinar console. Questions will be answered on the call as time allows.  Any questions not covered during the call will be answered and sent out to the registrant list.
- Additional questions can be submitted to or copies of this presentation can be requested by sending an email to Randy Shibata rtshib@sandia.gov

# Agenda

- Procurement Ground Rules
- Team
- Scope
- Schedule
- Budget
- BCIL Overview
- Q/A
- Summary

# Procurement Ground Rules

1. All questions and comments are to be directed to Randolph Shibata at rtshib@sandia.gov (505) 844-6768.
2. The members of the team have been advised to not take any inquiries or questions from any potential respondents. Sandia reserves the right to disqualify organizations who direct questions, comments or inquiries to individuals other than Randolph Shibata.
3. The Respondent shall address each of the criteria in Section 7 Criteria and supply supporting documentation, using the same numbering system in Section 7.
4. The submission shall include all of the information in Section 8
5. If a respondent fails to provide adequate supporting documentation, or provides answers that are incomplete, vague, and not specific to the criteria, fails to address any one of the criteria or merely restates the question without providing supporting documentation, Sandia will presume that the respondent cannot meet the criteria. In these cases, Sandia reserves the unilateral right to remove the respondent from further consideration.
6. This is a request for information, and is not a solicitation. At this time, no funding is available. At this time, Sandia will not be conducting the actual procurement, should one even be performed.
7. Sandia will not consider any responses from non US firms.

# BCIL Electrical Energy Storage Team

- Major John S. Pires,  US Army
- Jon Viggato, System Acquisition Manager, PM Force Sustainment Systems
- Thomas Merrill, PM Force Sustainment Systems
- Erich Amrhein, PM Force Sustainment Systems
- Ben Schenkman, Lead Electrical Engineer, Sandia National Laboratories
- Randy Shibata, Lead Procurement Specialist, Sandia National Laboratories
- Dan Borneo, Engineering Project Manager, Sandia National Laboratories

# BCIL RFI - Scope

- Purpose: Demonstrate state of the art electrical energy storage units in a Forward Operating Base (FOB) environment.
- Focus: Distributed electrical energy storage technologies including but not limited to batteries, flywheels, supercapacitors, etc.
- Goal: Successfully demonstrate Electrical Storage Technologies that will further the Military's effort to reduce fuel use and increase the efficiency and effectiveness of the power systems at FOBs.
- Activities: Evaluate RFI responses in relation to the selection criteria; select systems and invite selectee(s) to perform demonstrations; initial testing at Sandia Labs 2-4 weeks; If testing is successful follow-on testing at BCIL located at Ft. Devens, Ma (4+ weeks). Repeat for all systems selected.
- Possibility of demonstration at additional Military sites.
- Note: This is to test and evaluate energy storage systems only. This testing may or may NOT lead to an Issuance of a RFP/RFQ. The issuance of a RFP/RFQ is not part of this program.

# Schedule

9/5/12, 5:00 pm MDT – Questions submitted

9/7/12, 5:00 pm MDT - Answers provided

9/11/12, 5:00 pm MDT – Submissions due

Depending on number and quality of responses, we intend to invite Vendors to demonstrate their system as early as Q4, CY2012 and start demonstrations as early in Q1, CY2013

# Budget

- Costs of demonstrations to be borne by vendors

- Sandia will provide funding for all testing and evaluation

# BCIL Overview

- Product Manager Force Sustainment Systems (PdM-FSS) and the Fort Devens leadership, established the BCIL at Fort Devens, MA
- BCIL evaluates immediate off-the-shelf capabilities that reduce Operational Energy requirements, overall fuel consumption, waste reduction and reducing environmental risk at small unit base camps
- The ten acre BCIL is divided into two 150-soldier subsets - a “control” camp that is based on the Army standard Force Provider configuration, and a “test” camp that allows the integration of alternative solutions
- BCIL Configuration and network and communications infrastructure provides capability for real-time data collection and direct comparison of components and systems, including fuel
- BCIL supports the integration and evaluation of future expeditionary Contingency Basing solutions.
- BCIL provides data to substantiate and support the rapid fielding of systems that further reduce Operational Energy demands and improve energy and resource efficiencies for future force sustainment and basing systems.
- Operational Energy performance means using energy to our greatest benefit through “energy-informed operations”.
- Combined improvements will reduce fuel consumed in the Force Provider base camp by >35% and will be installed in deployed modules.

# Base Camp Resource & Energy Efficiency Initiative

**Ft Devens Base Camp Integration Laboratory - Allows for the integration and evaluation of immediate and future expeditionary Contingency Basing solutions providing data to substantiate and support the rapid fielding of solution sets that improve Energy & Resource Efficiencies for currently deployed and future force sustainment and basing systems.**

# BCIL Efficiency Metrics

Collecting evaluation data to obtain quantifiable components of performance when compared to current configuration

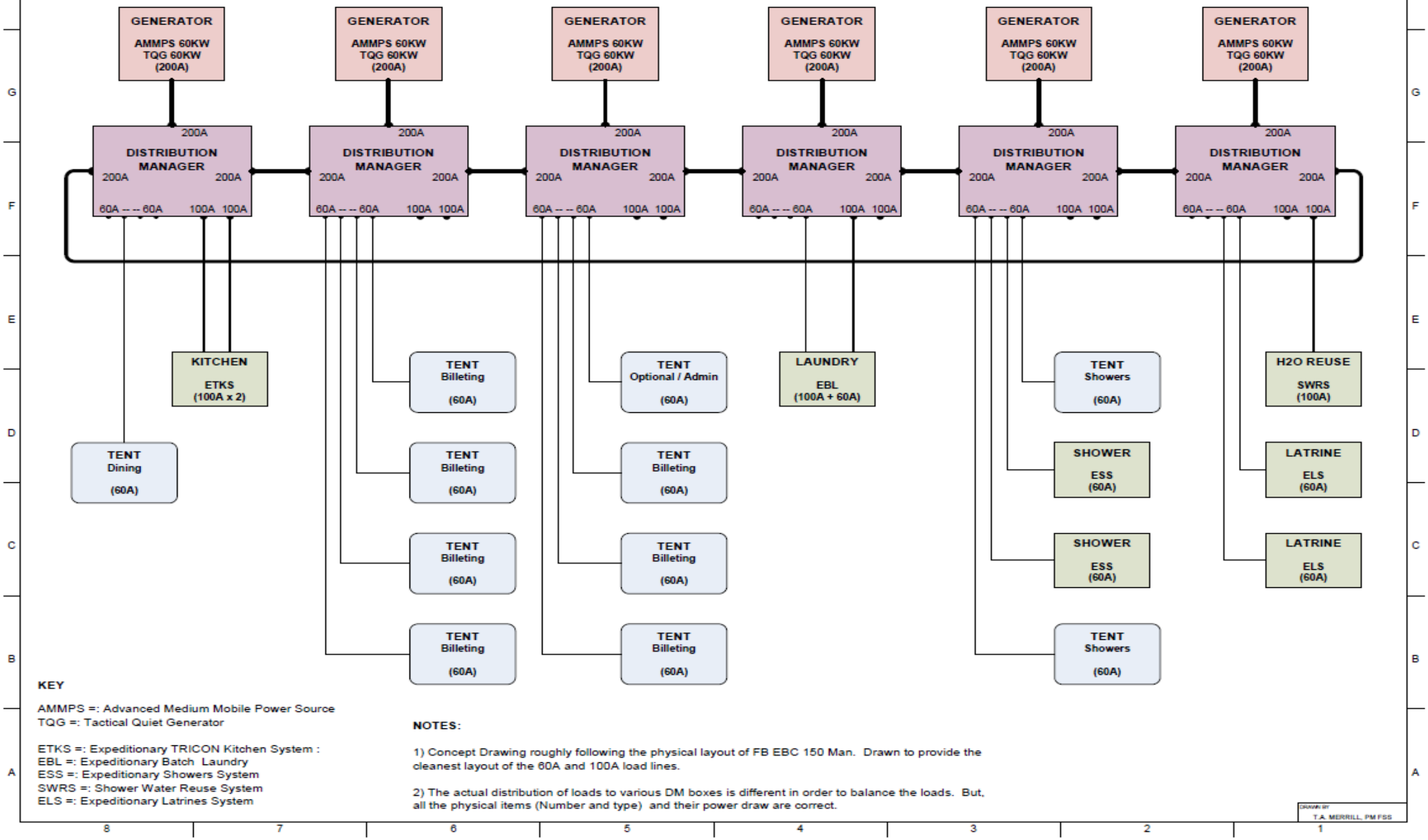
- Overall impact on fuel requirement
- Overall impact on water requirement
- Overall impact on waste stream
- Effect on transportation footprint
- Effect on sustainment tail
- Estimated Return on Investment
- Assessment of Suitability for deployment



# BCIL RFI – Mandatory Requirements

- Applicants must document:
  - Ability to meet requirements as listed in the RFI.
  - Demonstrated technical readiness level as required in RFI (TRL 6+).
  - Demonstrate that systems are commercially available and can meet schedule as negotiated by Supplier, SNL, and BCIL.
  - RFI response developed with enough detail to make informed decision on the Scope of work, system size (KW, KWH), intended operation to meet fuel reduction goals, and adherence to other selection criteria.

# Force Provider (FP) Expeditionary Base Camp (EBC) – One Line Power Diagram – FP Microgrid & FP 150 Man EBC




**KEY**

AMMPS =: Advanced Medium Mobile Power Source
TQG =: Tactical Quiet Generator

ETKS =: Expeditionary TRICON Kitchen System :
EBL =: Expeditionary Batch Laundry
ESS =: Expeditionary Showers System
SWRS =: Shower Water Reuse System
ELS =: Expeditionary Latrines System

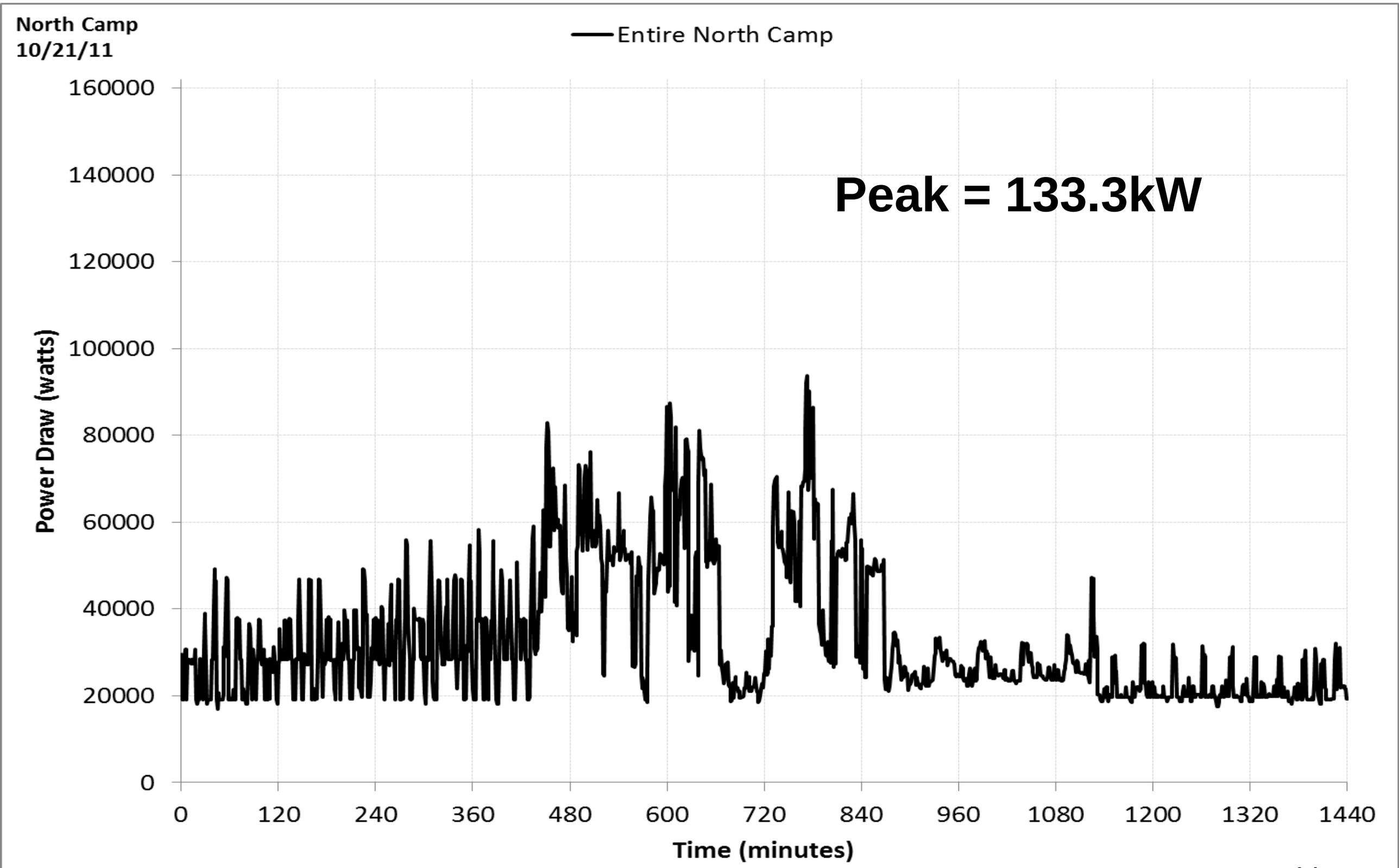
**NOTES:**

1) Concept Drawing roughly following the physical layout of FB EBC 150 Man. Drawn to provide the cleanest layout of the 60A and 100A load lines.

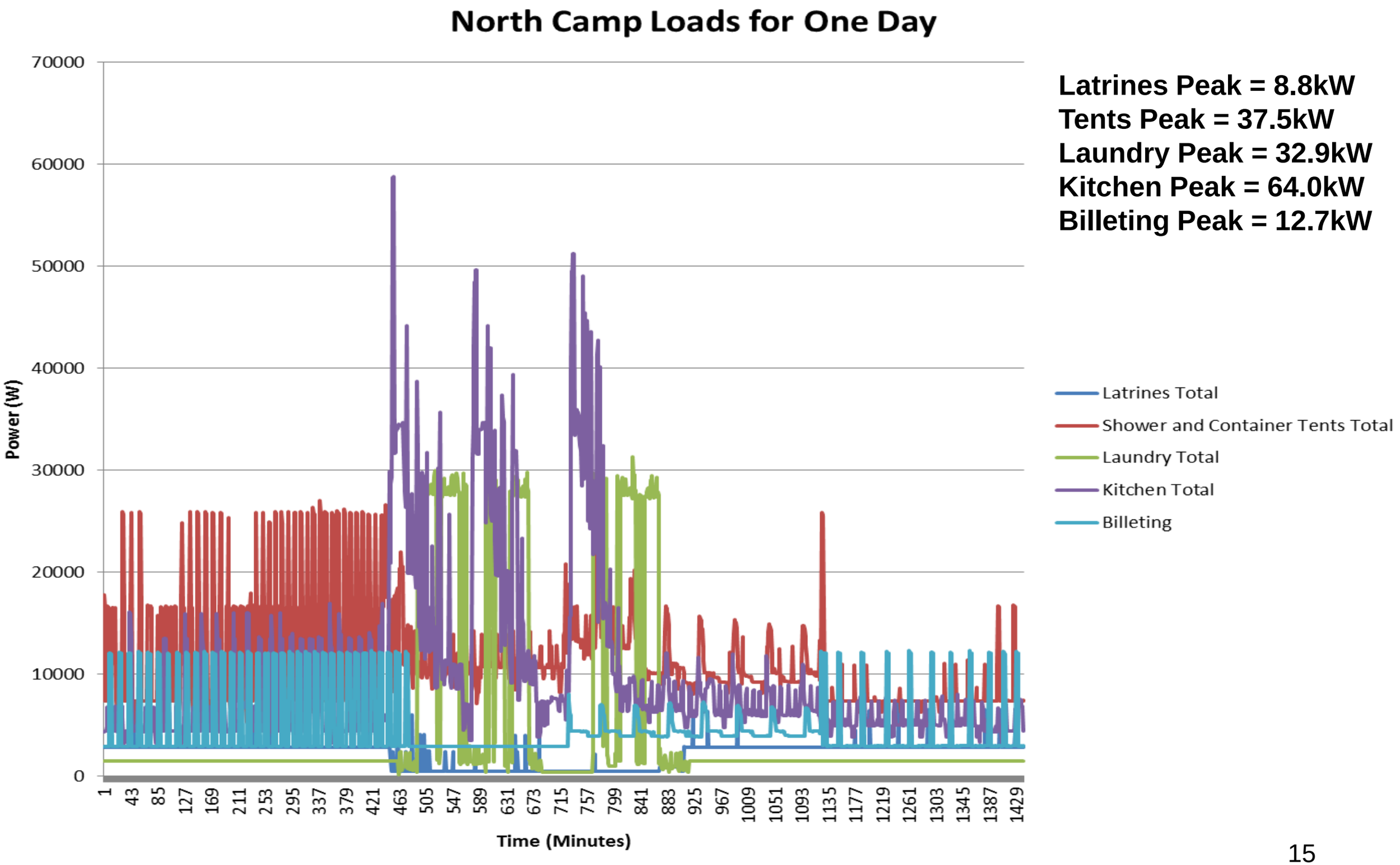
2) The actual distribution of loads to various DM boxes is different in order to balance the loads. But, all the physical items (Number and type) and their power draw are correct.

DRAWN BY
T.A. MERRILL, PM FSS

# CAMP Load Profile



# CAMP Load Profile




**Latrines Peak = 8.8kW**
**Tents Peak = 37.5kW**
**Laundry Peak = 32.9kW**
**Kitchen Peak = 64.0kW**
**Billeting Peak = 12.7kW**

# QUESTIONS?

- Please enter your question in the Question Pane of your control panel.

# Questions - Technical

- What is the Electrical Energy Storage Size requirement
  - The Typical FOB operates 6- 60 KW 208/120 3 phase gensets. The simulated load profiles shows a max KW = 135 KW. We are open to suggestions from suppliers as to size and application with regard to reducing generator fuel consumption. The following may help as a guide:
    - Minimum KW - To achieve the goal of 100 amp 3ph, 208/120 V system a 35 KW system would suffice. To replace a 60KW generator a 50 - 60KW system or multiples of systems equaling 60KW may suffice.
    - Maximum KW – The total load should not exceed 360 KW, therefore any system up to that size. Given the weight and size limitations, and a request for a 200 Amp system, the maximum system rating of 75-125 KW (based on simulated loads) might be more practical.
    - KWh – 1-4 hours or…

# Questions - Technical

- Is their a load profile for the camp?
  - Yes, there is a simulated load profile for the total camp and the individual feeders.  Profile is part of this presentation.
- What is “AC Input”
  - Able to connect to the AC grid and see only the renewable energy for a kind of smoothing application. This can be done with monitoring and controls.
- Why are their size and weight limitations?
  - The Army all-terrain forklift has a maximum capacity of 10K lbs.  The Military standard airlift pallet, the 463L pallet, has a maximum weight of 10K lbs.  A TRI-CON container efficiently fills one 463L pallet position in  a Military Aircraft. Therefore each  TRI-CON container must weight less than 10K lbs, including the weight of the container.
- Can we use multiple tri-con containers?
  - Yes, within reason.

# Questions - Technical

- How long does the energy storage need to run when being utilized in the generator replacement application?
  - This will be determined by the vendor upon seeing the load profile and determine where the maximum fuel savings exist.
- What is the system maturity level required?
  - TRL 6 for demonstration at Sandia
  - TRL 7+ for demonstration at BCIL (Ft. Devens)
- How much renewable will be online?
  - There is no determined amount. The answer will be 0%-100% penetration of peak load. Provide range of energy storage size for increments of 10% penetration of renewable energy from 0%-100%.
- Does the energy storage system have to comply with IEEE 1547?
  - No, we want the energy storage system to ride through any disturbances.

# Questions - Technical

- Will there be a DC bus switchgear where the energy storage system and renewables come together?
  - This will be part of the energy storage system provided by the vendor. Size will be determined by the vendor.
- If a system is downstream of the distribution  box, can it provide power?
  - As of now, it cannot. All power will flow from source to load (uni-flow).
- Out of box ready?
  - We would like a system that when delivered and installed will connect with minimum efforts. Basically, we would like to connect the electrical connections to the energy storage systems and push a run button (set it and forget it).
- Is there an electrical one line for the Ft. Devens Base Camp?
  - Yes, it is part of this presentation.

# Questions - Technical

- Can you explain the distribution manager box?
  - The distribution manager box is basically a distribution panel. It sits on the ground near the gensets. On the line side it is connected in a ring bus configuration while also connected to the generators. This allows the capability of sharing load amongst the generators. On the load side the box contains various breakers for service to the individual loads. Another feature is that each box contains two or three contactors of various sizes. These contactors give the system load shedding capability, if properly controlled.

# Questions - Funding

- How much total funds are available for this solicitation?
  - As stated in the RFI, it is expected that Vendors will field and demonstrate their systems at their expense.  Sandia will conduct testing and evaluation at the Sandia test site and at BCIL at no cost to the vendor.
- Please explain what costs the vendor will be accountable for.
  - The system costs and all associated ancillary equipment needed for the system to operate.
  - Containers to house the system
  - Shipping Costs to Sandia and BCIL
  - Installation costs including cabling
  - Start-up and commissioning cost
  - Warranty costs while system is in test

NOTE:  Neither Sandia or BCIL will assume any liability for the system while under our control

# Questions - Timeframe

- What is the timeframe for this project? 2012? Or 2013?
  - We anticipate making invitations to demonstrate by the end of Calendar year 2012, if not sooner, with the start of the testing to be in Q1 of Calendar year 2013

# Questions - Eligible Applicants

- Can a foreign company apply for this project? Or a foreign company's US subsidiary?
    - We will not accept any response from a non-US entity
- Can a Vendor submit more that one response?
    - Yes, If a vendor has more than one system they wish to demonstrate

# Questions - Response

- Some of the information requested in the RFI seems more akin to an RFP. Exactly how detailed do you expect the RFI response to be?
  - For this RFI we are not expecting a detailed project management plan. However, we would expect an outline of the project, detailing what you intend to do, how it will provide benefit to BCIL , and timeline of activities associated with fielding the system
- What will  be done with the information received from the vendor?
  - The information will be used to determine suitable vendors to conduct demonstrations at Sandia and BCIL (Ft. Devens)

# Questions - Technology Testing Requirement

- The RFI requires that all technologies be tested at SNL's test facility for 2-4 weeks prior to deployment at BCIL.  Is this a firm requirement?
    - At this point in time assume that we will require testing at SNL for all electrical energy storage technologies.

# ?

*Please enter your questions in the Question Pane of your control panel*

*NOTE: Some questions may require additional research. Please make sure you are on the Sandia bidders list if you want to receive the accumulated Q&As (email Randy Shibata: rtshib@sandia.gov).*

# Procurement Ground Rules

1. All questions and comments are to be directed to Randolph Shibata at rtshib@sandia.gov (505) 844-6768.
2. The members of the team have been advised to not take any inquiries or questions from any potential respondents. Sandia reserves the right to disqualify organizations who direct questions, comments or inquiries to individuals other than Randolph Shibata.
3. The Respondent shall address each of the criteria in Section 7 Criteria and supply supporting documentation, using the same numbering system in Section 7.
4. The submission shall include all of the information in Section 8
5. If a respondent fails to provide adequate supporting documentation, or provides answers that are incomplete, vague, and not specific to the criteria, fails to address any one of the criteria or merely restates the question without providing supporting documentation, Sandia will presume that the respondent cannot meet the criteria. In these cases, Sandia reserves the unilateral right to remove the respondent from further consideration.
6. This is a request for information, and is not a solicitation. At this time, no funding is available. At this time, Sandia will not be conducting the actual procurement, should one even be performed.
7. Sandia will not consider any responses from non US firms.

# *Contact Information*

Sandia National Laboratory


Randy Shibata

Email: rtshib@sandia.gov


NOTE:  Presentation and audio will be located at www.sandia.gov/ess